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low the surface it had a temperature of $28^{\circ} 5$ F. and was barely up to the freezing point at three hundred and eighty-two feet. It is very different on the American continent. The rare opportunity was afforded me by a landslip on a large scale in May, 1844, of observing its entire thickness near Fort Norman, on the Mackenzie river, about two hundred miles further north than Yakutsk, and it was only forty-five feet. At York factory and Hudson's bay it is said to be about twenty-three feet. The recent extension of settlements in Manitoba has led to wells being sunk in many directions, establishing the fact that the permanently frozen stratum does not extend so far as that region, notwithstanding an opinion to the contrary of the late Sir George Simpson. Probably it does not cross Churchill river, for Sir H. Le-froy was assured that there is none at Lake à la Crosse. It depends in some measure on exposure.

In the neighborhood of high river banks, radiating their heat in two directions, and in situations not reached by the sun, the frost runs much deeper than in the open. The question, however, to which Sir John Richardson called attention so long ago as 1839, is well deserving of systematic inquiry, and may even throw some light on the profoundly interesting subject of a geographical change in the position of the earth's axis of rotation.

The Saskatchewan is now navigated from the Grand Rapids, near Lake Winnipeg to the base of the Rocky mountains. The impediments to navigation on the Nelson river have been found to be insuperable, and a company has been formed to make a railway from the lowest navigable point to the mouth of the Churchill river.

The land around Hudson's bay is rising at the rate of five to ten feet in a century. The mouth of the Churchill affords far superior natural advantages for shipping the agricultural products of the Northwest territory than York Factory.

MICROSCOPY.¹

THE NATIONAL SOCIETIES.—The American Society of Microscopists, held its third annual meeting at Detroit, on the 17th to 19th, of August last, under the presidency of Prof. H. L. Smith, of Geneva, New York. Regular morning and afternoon sessions were held during the three days; and, in all, fourteen papers were read, eight on microscopy proper, and six on natural history subjects connected with the use of the microscope. Included in the latter number is the very elaborate and interesting President's Address, delivered by Prof. Smith, on the subject of Deep Sea Life. A *soirée* was held in a public hall one evening, which was well attended, and was as fully calculated to accomplish its object of public entertainment and popular instruction in the powers and application of the microscope, as could reasonably be expected

¹ This department is edited by Dr. R. H. Ward, Troy, N. Y.

under the disadvantage of very limited time and opportunities for preparation. No executive business of very general interest and radical importance was transacted, except, perhaps, the adoption of a rule prohibiting the publication elsewhere of papers read before the Society in advance of their appearance in the official proceedings; an experiment which is not likely to be successful, as its operation, if persisted in, will, according to the experience of other organizations, greatly limit the activity of the Society itself without materially increasing the importance attached to its printed proceedings. Mr. J. D. Hyatt, of New York, was elected president, and the time and place of holding the next annual meeting were left to the selection of the executive committee.

The American Association for the Advancement of Science met in Boston on the following Wednesday, August 25th, and continued in session for eight days. It is safe to say that no such meeting of scientists has ever been held in this country before, or is likely to be soon held again. A thousand members were in attendance, including names notable in every branch of science; two hundred and eighty papers were presented, extending over a wide range of subjects, and many of them of universal interest; while the thoughtful and lavish hospitality of the citizens of Boston and vicinity rendered the week of the meetings an ovation, from beginning to end. Of such a vast enterprise, the subsection of microscopy would necessarily be a small though not unimportant fraction. Under the chairmanship of Prof. S. A. Lattimore, of Rochester, and with the able assistance of the Boston Microscopical Society, the best of arrangements were made, and formal meetings were held on three different days, at which meetings fourteen papers were read, eight upon microscopy proper, and six upon natural history subjects connected with the use of the microscope. In addition to these, many valuable microscopical papers were read at various times, in other sections, in connection with botany, entomology, etc., to say nothing of unlimited opportunities of intercourse with persons distinguished in related branches of science, of hearing papers and discussions on other subjects, and of enjoying the general privileges of a memorable week. Much field work was done by various members, on the seashore and elsewhere. A soirée was given at the usual rooms of meeting, during one evening, but no attempt was made to render it a popular exhibition. Rev. A. B. Hervey, of Taunton, Massachusetts, was elected chairman for the next meeting, which will be held at Cincinnati.

Probably no thoughtful person who attended both meetings this summer, the American Society of Microscopists at Detroit, and the subsection of microscopy, A. A. A. S., at Boston, failed to notice the nearly equal division of strength between the two conventions. The personal attendance at the meetings was about equal, though mainly of different individuals; the number of papers read was

precisely the same, and it is only fair to say that in interest and importance they were very evenly divided. It is obvious that if the strength of the two meetings could have been combined in one, the result would have been far more adequate and satisfactory. This reflection has derived force from the well known fact that in the Microscopical Congress at Indianapolis, nearly half the voices were in favor of joining with the A. A. A. S., instead of forming a separate society, the latter course being adopted in the critical vote by a majority of one. From first to last, it has been of great and conceded importance to combine all our strength in one enterprise; but the obstacles which originally rendered this impossible, still remain, and it is evident that indiscreet controversy might increase and perpetuate the difficulties it was designed to remove. It would be absurd to ask persons accustomed to attend the meetings of the great society, and highly valuing its opportunities for intercourse with a large number of leading minds in various departments of science, to abandon that for any narrow organization, however attractive might be its field. On the other hand the new society could not profitably be united with the old, as has been proposed, without a more cordial and general support of such a procedure than could at present be hoped for. The subordination to greater interests, which would be encountered in uniting with the great society, would be more than counterbalanced, in many minds, by the social and scientific advantages gained; and the fact that many of the papers read would be excluded from the Proceedings by a necessity which admits only contributions new to science, would be of little consequence, since popular papers gain an earlier and a wider distribution through the popular journals; but a more serious difficulty arises from the localities in which the meetings of the A. A. A. S., are sometimes held. The large and powerful society can afford to appoint meetings, not unfrequently, for the sake of cultivating local interest in science, in localities which would be unavailable for the microscopical meetings. A joint meeting at Boston would have given a large increase of vitality; the same will not be equally true of all other localities.

If for these or any other reasons, it should be impracticable to combine the two societies at present, the greatest advantages would doubtless be secured by such a policy as would show, on both sides of the question, a reasonable and considerate regard for the interests of the other. The very large minority at Indianapolis acquiesced in the formation of a new society with the understanding that the times and places of meeting were to be so chosen as to best accommodate those who might wish to attend both. This policy, if fully carried out, would not prevent meeting at the same place when expedient, and would not require it when some other correlated place would be advisable. It would give many of the advantages of union, with entire freedom from its

difficulties. It is the least that could in reason be asked, or that could in common courtesy be granted as a means of securing a cordial and harmonious support for the new society.

NEW LOCAL SOCIETIES.—The Central New York Microscopical Club was organized some months since, at Syracuse, New York.

The Lancaster, Pennsylvania, Microscopical Society, J. W. Crumbaugh, M. D., president, was organized February 9th.

The Elmira Microscopical Society was organized May 13th, with S. O. Gleason, M. D., for president, and D. R. Ford, Ph.D., vice-president, and T. J. Up de Graff, M. D., secretary and treasurer.

The Fort Wayne Microscopical Society held its first meeting, September 18th, with F. W. Kuhne, president, C. A. Dryer, M.D., and C. W. McCaskey, M. D.; vice-presidents, C. L. Olds and L. R. Hartman, secretaries, and Paul Kuhn, treasurer.

The Microscopical Society of Central Illinois was organized at Springfield, Illinois, September 23d, F. L. Matthews, M. D., being the first president, and T. B. Jennings, secretary.

The Reading, Pennsylvania, Society of Natural Sciences, which has been in existence for over ten years, held a series of microscopical meetings, of the *soirée* order, last winter, which were quite successful, and which will probably be continued.

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SCIENTIFIC NEWS.

— At the late meeting of the American Association at Boston, Prof. A. Hyatt gave a popular lecture on the transformation of Planorbis as a practical illustration of the evolution of species. The lecture was illustrated with stereopticon views. After the lecture Mr. Carl Seiler threw some microscopical illustrations upon the screen. Prof. Hyatt spoke substantially as follows: The word evolution means the birth or derivation of one or more things or beings from others, through the action of natural laws. A child is evolved from its parents, a mineral from its constituents, a state of civilization from the conditions and surroundings of a preceding age. While evolution furnishes us with a valuable working hypothesis, science cannot forget that it is still on trial. The impatience of many when it is doubted or denied, savors more of the dogmatism of belief than of the judicial earnestness of investigation. Every individual differs in certain superficial characters from the parent forms, but is still identical with them in all its fundamental characteristics. This constantly recurring relationship among all creatures is the best established of all the laws of biology. It is the so-called law of heredity, that like tends to reproduce like. There seems to be only two causes which produce the variations which we observe; one is the law of heredity, the other is the surrounding influences or the sum of